

REMARKS

This is in response to the office action dated June 22, 2004.

Applicant notes paragraphs 1-3 of the office action and affirms the election of the invention of Species A, claims 1-3, 6-12, 14 and 15.

Applicant notes paragraphs 4-6 of the office action and herewith submits corrected drawing Figs. 1A, 1C, 4 and 4A along with marked up changes in red. Applicant wishes to thank the Examiner for the careful review of the application especially in regard to the drawings.

Claims 1-3, 6-12, 14 and 15 were rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (USP 6,095,295) in view of Johnston et al. (USP 6,318,522).

In the rejection the Examiner correctly indicates that “Park lacks a second paddle in the structure of the rotary impeller.” The Examiner apparently did not recognize, however, that applicants’ claim 1 also requires “a coil **surrounding** a portion of said passageway” enabling the viscosity of the magnetorheological fluid to be varied and that Park lacks the claimed coil **surrounding** a portion of a passageway.

Instead, Park illustrates a coil 122 buried within annular solenoid 114/annular body 114 and beneath a seal 138. Park is silent as to the orientation of the coil but states at col. 3, lns. 52 et seq.:

“During swing of the wing 112, the magnetorheological fluid in the first fluid chamber 116A flows to the second fluid chamber 116B through the first hole

128, the first cylindrical space 126, the annular space 125, the second cylindrical space 127 and the second hole 129. The rotating direction of the wing 112 and the flow direction of the magnetorheological fluid are represented by arrows in Fig. 4.”

Further, at col. 3, lns. 25 et seq., Park states:

“Upon magnetization of the annular body 121, two confronted ends 123 and 124 of the annular body 121 at the discontinuation act as magnetic poles having opposed polarities to each other. Furthermore, an opened annular space 125 formed between the ends 123 and 124 connects a first cylindrical space 126 to a second cylindrical space 127.”

The orientation of the coil is not disclosed and cannot be established from the disclosure of the Park patent. It can be, however, discerned that the coil 122 is buried beneath the annular space 125 which carries the magnetorheological fluid. **Coil 122 does not surround a passageway or annular space.** Claim 1 requires a coil which **surrounds** a portion of a passageway enabling the viscosity of the magnetorheological fluid to be varied. In applicants’ claim 1 it is the flux within the coil surrounding the magnetorheological fluid which increases the viscosity of the fluid in proportion to the current through the coil

The Examiner in the rejection indicates that the teachings of Johnston ‘522 should be applied in combination with Park ‘095 because it would have been obvious to modify Park’s magnetorheological device to have comprised two paddles as taught by Johnston to further increase the adjustability of the damping

capability of the device. First, applicant's invention has two paddles but they have nothing to do with adjustability. Second, Park and Johnston are not properly combinable because Applicants teach compression of the magnetorheological fluid and Park and Johnston teach shearing of the magnetorheological fluid. See, col. 4, line 28 of Johnston and the gaps 38 illustrated in Fig. 2.

Park and Johnston both teach shearing of magnetorheological fluid and this is consistent with their purpose of damping. Both Park and Johnston are directed toward damping.

Reconsideration of claim 1 is respectfully requested as it is believed patentable.

Claims 2 and 3 are dependent on allowable claim 1 and reconsideration of claims 2 and 3 is requested.

In regard to claims 4 and 5, neither Park nor Johnston illustrates a permanent magnet and a coil. As such claims 4 and 5 are allowable and rejoinder of them is requested.

In regard to claims 6 and 7, Park only shows an exterior, not an interior passageway. In any event, for the reasons previously stated in regard to claim 1, claims 6 and 7 are patentable. It is believed that the Examiner's rationale for rejecting claims 4 and 5 was intended as the rationale for rejecting claims 6 and 7 as claims 4 and 5 presently stand as withdrawn. Reconsideration of claims 6 and 7 is requested.

In regard to claims 8, 9 and 11, none of the claimed edge seals are shown in

Park, nor are the claimed third and fourth seals shown in Park. These seals are fixed to the end portions and the end plate, respectively. The seals of Park are on the top of the impeller and not on the bottom thereby creating a leakage problem. Reconsideration of claims 8, 9 and 11 is respectfully requested.

In regard to claim 10, Park does not disclose a passageway having a tortuous path exterior to the housing. As such, reconsideration of claim 10 is requested.

Claims 12-14 have been canceled.

Claim 15 has been amended to add the limitation of the coil surrounding the passageway and is allowable as amended for the reasons stated above in connection with claim 1. Further, in regard to claim 15 of applicants' invention (as amended), since the coil surrounds the passageway, a plug is formed within the passageway which solidifies the magnetorheological fluid. The Examiner suggests that the fluid in Park will also be solidified and form a plug if enough current is pumped to Park's coil which resides well below the passageway and which is embedded in the body of the device. Even assuming for the sake of argument that this is possible, the Examiner should recognize that applicants' invention as claimed in claims 1 and 15 is structurally different and distinct from Park and Johnston. It is doubted that the structure of Park could form a plug and even if it is possible to form a plug it is further doubted that the structure of Park would be practical to form a plug. As such, claims 1 and 15 are allowable.

According to the disclosure of Park, it does not form a plug as alleged by

the Examiner. Nor does anything in Park imply that a plug would be formed.

Reconsideration of claim 15 is respectfully requested.

Respectfully submitted,

A handwritten signature in cursive script that reads "Kent Stone". The signature is written in dark ink and is positioned above the typed name and address.

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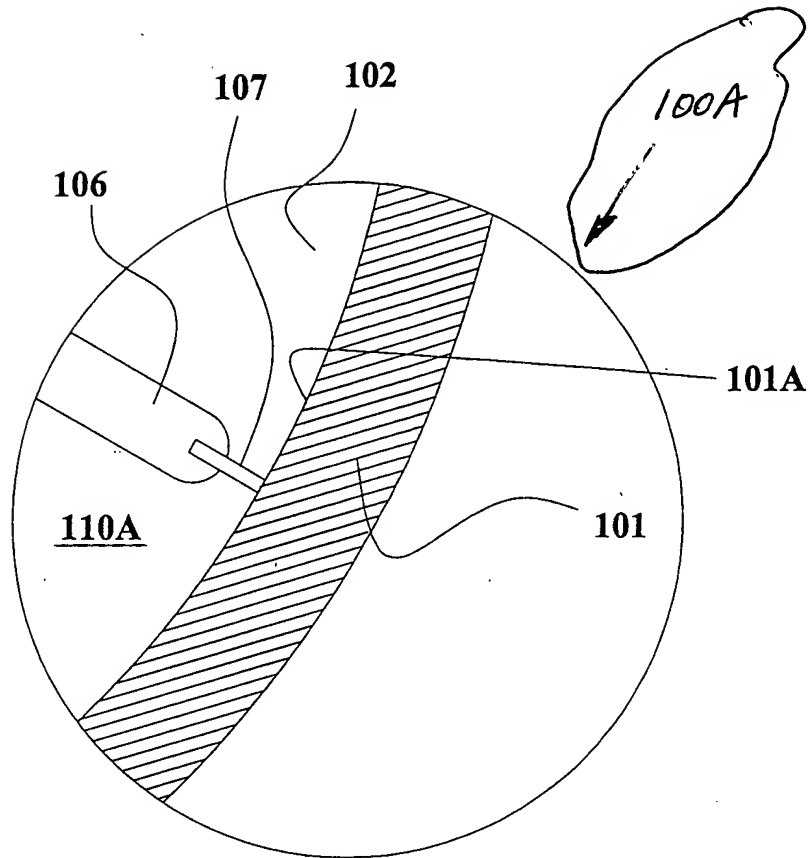


FIG. 1A



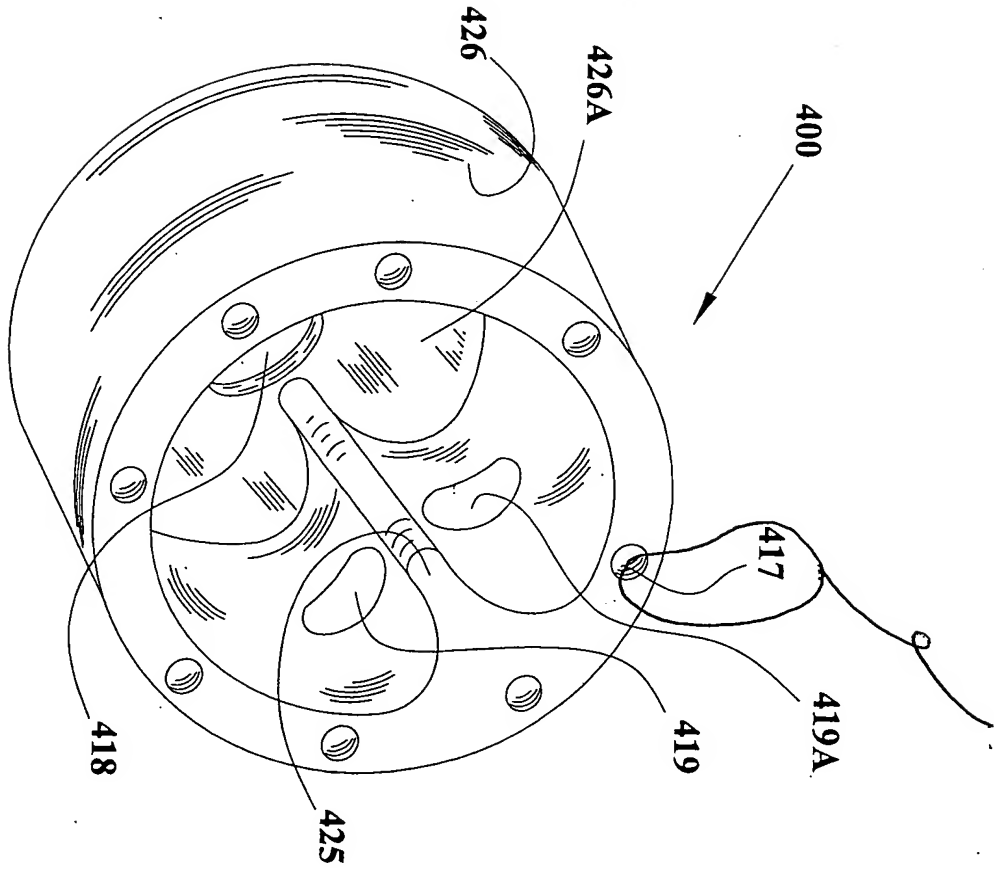


FIG. 4



FIG. 4A

